Journal of International Business Studies (2025) 56:1050–1068
https://doi.org/10.1057/s41267-024-00752-0

User language and cultural product innovation: insights from the global mobile gaming industry

Pengxiang Zhang[1] · Jingtao Yi[2] · Chao Niu[3] · Eric Yanfei Zhao[4] · Sali Li[5]

Received: 30 January 2023 / Revised: 1 September 2024 / Accepted: 17 September 2024 / Published online: 29 October 2024

Abstract
Traditional studies on cultural industries have emphasized localized innovation rooted in cultural products' countries of origin. While this research acknowledges the significance of production origin, the digital transformation of cultural industries has shifted the landscape of cultural product innovation from traditional localized processes to a more globalized and democratic approach by engaging users worldwide. However, there is a notable gap in understanding demand-side variations in users from different countries, particularly as digitalization allows global users' languages to convey diverse linguistic inputs. To address this gap, we investigate how users' future-time reference (FTR) across countries influences the pace of cultural product innovation in the mobile gaming industry. Analyzing a global sample of 7787 mobile games, we find that in countries where gamers predominantly use weak FTR languages, their communication exhibits proximate temporal framing, prompting the introduction of new gaming content at a faster pace. Further, the effectiveness of such FTR framing becomes more pronounced when publishers pay close attention to or are familiar with gamers' languages. These findings contribute important insights for research on country of origin and cultural industries and for managers to better engage users to drive cultural product innovation.

Keywords Cultural product innovation · Global user involvement · Future-time reference · Temporal framing · Digitalization

Introduction

Digital transformation has fundamentally reshaped the innovation landscape of cultural industries. In the past, the creation of cultural products was largely confined within national boundaries (Hirsch, 1972; Peterson & Anand, 2004), deeply immersing these products in the distinctive cultural contexts of their countries of origin. However, the advent of digital technologies has opened up unprecedented opportunities for a global pool of users to contribute diverse perspectives to the creation of cultural products, fostering innovative and interactive experiences (Lampel & Germain, 2016; Wang et al., 2020). For instance, on digital marketplaces such as Wattpad, a global community of readers and writers come together to share and evolve stories, with readers' comments directly shaping writers' narrative direction and thematic

Accepted by Marjorie Lyles, Stephanie Wang, and Allan Bird, Special Issue Guest Editors, 17 September 2024. This article has been with the authors for four revisions.

✉ Jingtao Yi
yijingtao@rmbs.ruc.edu.cn

Pengxiang Zhang
zhangpx@gsm.pku.edu.cn

Chao Niu
andyniu@cuhk.edu.cn

Eric Yanfei Zhao
eric.zhao@sbs.ox.ac.uk

[1] Guanghua School of Management, Peking University, 5 Yiheyuan Road, Haidian District, Beijing 100871, China

[2] School of Business, Renmin University of China, No. 59 Zhongguancun Street, Haidian District, Beijing 100872, China

[3] Shenzhen Finance Institute, School of Management and Economics, The Chinese University of Hong Kong, Shenzhen, 2001 Longxiang Boulevard, Longshan District, Shenzhen 518172, China

[4] Saïd Business School, University of Oxford, Park End St, Oxford OX1 1HP, UK

[5] Darla Moore School of Business, University of South Carolina, 1014 Greene St, Columbia, SC 29208, USA

innovation. This shift from localized creation to global collaboration underscores the expansive nature of cultural exchange with global users in driving the creative evolution of cultural industries.

Despite the profound impact of digitalization on cultural industries, a notable gap in the existing literature concerns the role of global users in this process. International business (IB) scholars have predominantly focused on cultural products' countries of origin (e.g., Bilkey & Nes, 1982; Samiee et al., 2024), often invoking concepts such as the liability of foreignness and cultural distance, which suggest that foreign cultural products are subject to cultural discounts outside of their domestic markets because most audiences lack familiarity with foreign cultural contexts (e.g., Benischke et al., 2023; Kim & Jensen, 2014). While this research stream recognizes the importance of production origin, it overlooks the diverse cross-cultural contributions that users from different countries can make through their linguistic inputs. Therefore, it is crucial to broaden the scope of analysis by incorporating the significant role global users play in the innovation of cultural products.

Addressing this gap, our study delves into the mobile gaming industry to explore how the varied linguistic inputs from users across different countries contribute to the innovation of cultural products. We spotlight mobile games as a dynamic subset of cultural products that blend advanced digital technologies, artistic creativity, and cultural expression (Rietveld, 2011). Mobile games have become universally accessible through digital marketplaces such as the Apple App Store, allowing gamers to download, play, and provide feedback on them. The associated ease of access allows gamers to convey their cultural and artistic preferences along with their temporal cues, which in turn drives timely updates of mobile games. Timely updates are crucial because mobile games, along with other digital-era cultural products, are increasingly characterized by experience-based consumption (Hadida et al., 2021; Pine & Gilmore, 1999), where the demand for new content is intensified by users' fear of missing out on the latest and most rewarding trends. This time-sensitive nature of gaming experiences creates constant pressure on mobile game publishers to continuously innovate and promptly deliver game updates. Therefore, this study focuses on how global gamers' temporal framing – through diverse linguistic expressions and future-oriented cues in their online comments – affects the pace of new content introduction in mobile games.

To capture variations in temporal framing across global gamers, we focus on future-time reference (FTR) (e.g., Chen, 2013; Dahl, 2000), a grammatical structure that separates languages into two broad types: strong FTR languages (e.g., English, Russian) require speakers to separate future and present events grammatically, whereas weak FTR languages (e.g., Chinese, Finnish) do not mandate this distinction, allowing future events to be discussed in the present tense. Drawing upon intertemporal choice theory and framing research (Loewenstein & Elster, 1992; Nadkarni et al., 2019), we argue that gamers from countries with strong FTR languages are more likely to frame their expectations for new gaming content as distal from the present, thereby attenuating the perceived urgency and pace for immediate innovation in games. To substantiate our theoretical account of gamers' FTR as temporal framing, we further delve into the nuances of framing effectiveness to discern the boundary conditions of gamers' FTR framing effect by exploring the negativity of gamer feedback and the linguistic familiarity of game publishers (e.g., Cuypers et al., 2015; Giorgi, 2017). We posit that the impact of gamers' FTR framing intensifies when their feedback is markedly negative, and when linguistic familiarity is high. Using a dataset of 7787 mobile games competing in global markets, we employ the Cox proportional hazards model to analyze the pace of introducing new gaming content and find strong support for our predictions.

Our study makes three key contributions to extant literature. First, we expand the focus of cultural industry studies from the traditional emphasis on country of origin to cross-country variations in global user engagement. While previous studies on the liability of foreignness and cultural distance emphasize the production origin of cultural products, our findings complement these discussions by examining the demand side, where users from different countries can also influence cultural product innovation. Our results show that engaging with gamers in countries with weak FTR languages can increase the pace of content introduction in mobile games. Second, we enrich the understanding of digital-era cultural industries by demonstrating how digital technologies enable global users to act as co-creators rather than passive consumers. By revealing how global gamers affect the pace of new content introduction in mobile games, this study unveils the democratic nature of the innovation process between producers and users and underscores how this collaborative engagement drives the immersive and personalized experiences central to today's cultural consumption. Third, we integrate framing research with linguistic studies in IB, emphasizing how variations in users' FTR influence firms' innovation-timing and decision-making processes. Thus, we provide new insights into the cognitive impact of languages on innovation in a globalized context.

Literature background

Cultural product innovation and the involvement of global users

The innovation of cultural products is the driving force behind the creative evolution of cultural industries, which are distinct from the traditional sectors in which technological advancements predominate (Jaw et al., 2012; Miguel Molina et al., 2019). In the cultural domain, innovation centers on changes and modifications in cultural content, ensuring a seamless blend of tradition and novelty (Handke, 2004). As such, we define cultural product innovation as the introduction of aesthetic or symbolic content that changes the way cultural products are perceived, making them appear new or different. It is evident in cultural industries that the majority of publishers need to continuously innovate streams of new content, with few being able to lean on their legacy catalogues. This predominance of cultural product innovation has been attributed to users' constant need for new cultural experiences across the world (Caves, 2000; Pine & Gilmore, 1999). This constant need is particularly important in the digital era, as the primary focus of innovation has shifted from providing discrete goods and services to creating seamless experiences (Lampel & Germain, 2016). For example, in the gaming industry, continuously updating existing games with unique aesthetics and storylines can be considered instances of cultural product innovation that meet gamers' ever-changing demands for immersive gaming experiences (Jones et al., 2016). As Lorenzen & Frederisksen (2007, p. 7) suggest, "This means a need for constant product innovation and a race for offering cultural products with new stories, designs or functionalities added to older versions."

IB scholars have predominantly focused on studying the country of origin of cultural product innovation (Lu et al., 2022; Samiee et al., 2024), often invoking concepts such as the liability of foreignness and cultural distance. This localized focus on innovation underscores the authenticity that cultural product innovation derives from products' countries of origin (e.g., Un, 2016; Wang et al., 2020). Indeed, the stereotypes and reputation associated with a country are crucial factors that users rely on when evaluating the authenticity of new cultural offerings. This research stream shows that cultural products from foreign countries or those with greater cultural distance are often perceived as less valuable compared to their domestic counterparts (e.g., Elliott et al., 2018; Wang et al., 2021). Scholars have also introduced the notion of cultural discount to further exemplify the challenges foreign cultural products face in the global market (Lee, 2006). In sum, existing studies provide abundant insights into how the country of origin can be a barrier to cultural product innovation.

However, as digital technologies are revolutionizing cultural industries by involving users worldwide in the creative process, they open new research opportunities for exploring the demand side (Priem et al., 2012). Unbound by geographical constraints, digital marketplaces serve as the meeting grounds for publishers and users across the world, considerably removing the barriers for global users to participate in innovation (Cochoy et al., 2020; Hirsch & Gruber, 2015). As such, the innovation of cultural products is evolving into a more democratic endeavor, with information and knowledge being sourced from global users as invaluable inputs. This digital cultural participation is often seen in the form of online comments. For example, the constant influx of real-time, highly specific user comments from the Apple App Store across various country markets has become an important source of innovation for mobile games (Tian & Yang, 2023). The varied linguistic inputs from users across different countries, which can either foster or impede innovation, raise critical questions about the dynamics of cultural product innovation in a globally connected environment. It is not just about acknowledging the presence of diverse inputs but about discerning which types of user inputs from specific countries can foster innovation more effectively than others. In light of this, we argue that research on cultural product innovation in the digital era should consider the role of global users in addition to the traditional focus on the country of origin. In this paper, we seek to explore variations in comments from global users and how they influence cultural product innovation.

Temporal framing of global user involvement

The concept of framing is attractive for understanding how individuals sway audiences' perceptions and influence their decision-making through linguistic communication. Framing refers to the deployment of linguistic cues to selectively present certain aspects of reality in a more salient, familiar way to audiences (Entman, 1993). It involves creating a "mental bracket" to simplify audiences' sensemaking efforts, shape their perceptions, and ultimately guide their strategic actions (Cornelissen & Werner, 2014; Giorgi & Weber, 2015). A significant body of management research adopts the framing approach to understand how different actors – from employees to competitors, the public, media organizations, minority groups, and clients – employ linguistic cues in communication to influence firms' decision-making (Falchetti et al., 2022; Giorgi, 2017).

In particular, temporal framing stands out as a critical type of framing in our context as it directly reflects users' expectations for new cultural experiences. Temporal framing is especially significant in light of users' fear of missing out,

whereby they develop an intense need to stay connected to the latest trends and seek immediate cultural experiences driven by the uneasy feeling that others might be enjoying something more rewarding than they are (Good & Hyman, 2021). Thus, users' temporal framing could be perceived by publishers as an expression of this anxious feeling and may directly influence the pace of cultural product innovation. Specifically, research on temporal framing underscores the premise that timelines form the basis for the way audiences perceive decision-making scenarios, the range of alternatives they consider, and – ultimately – the choices they make (Loewenstein & Elster, 1992). For instance, temporal framing in the advertising context has been shown to have a huge impact on consumers' perceptions of product value and thus significantly affect their purchase behaviors (Chang & Lee, 2009). Central to this effect is the cognitive bias known as temporal discounting, which refers to how people usually apply a discount factor when they evaluate the future value of an action (DeHart & Odum, 2015). Thus, the temporal framing of delayed reward versus immediate gratification attached to an action may lessen how important audiences perceive the action to be, thereby affecting their promptness in taking the action. Recognizing its significance, scholars have increasingly highlighted how temporal framing influences future-oriented activities, such as innovation (Liang et al., 2018; Nadkarni et al., 2019). Indeed, the uncertain and forward-looking nature of innovation renders decision-making particularly susceptible to the way the timing of benefits is framed, in turn influencing audiences' perceptions and likelihood of being involved in prompt innovation.

Building on these ideas, we examine how temporal framing among global users shapes cultural product innovation. To capture cross-country variations in temporal framing, an important research stream focuses on how managers who speak various languages employ future-referring linguistic cues differently, also known as FTR (e.g., Chen, 2013; Thieroff, 2000). FTR is a grammatical structure that separates languages into two broad types: strong and weak FTR languages. Strong FTR languages (e.g., English) require speakers to separate future and present events grammatically, whereas weak FTR languages (e.g., Chinese) do not mandate this distinction, allowing future events to be discussed in the present tense. Managers who speak strong FTR languages tend to discount the value of future returns from innovation because they perceive the future as being distinct from the present. Conversely, managers who speak weak FTR languages perceive the future consequences of certain actions to be more imminent and therefore tend to make more future-oriented decisions. This linguistic nuance has real-world implications: managers using weak FTR languages have been shown to have stronger inclinations toward high R&D investments (Liang et al., 2018) as well as other future-oriented characteristics, such as reduced earnings misstatements (Kim, et al., 2017) and enhanced investment efficiency (Kim, et al., 2021). While IB scholars have made notable strides in understanding the impact of FTR, the narrow emphasis on managers' language use is limiting. Thus, in this paper, we propose a shift in focus to explore how global users affect the pace of cultural product innovation through their use of future-referring linguistic cues in interactions with publishers.

Empirical groundings and hypotheses development

The global mobile gaming industry

Gaming – recognized by UNESCO (2013) and the OECD (2022) as a cultural industry – exemplifies the fusion of artistic creation with digital technologies. This industry is a hub of artistic creativity and cultural expression, bringing together organizations of designers, scriptwriters, musicians, and software developers to produce games that are more than mere entertainment. It innovatively combines music, visual arts, storytelling, and design – pillars that have traditionally defined cultural expression – to shape and reflect societal values and narratives. As such, mobile gaming aligns well with the definition of cultural industry, which refers to a system of organizations that produce art and cultural goods industrially. Moreover, the mobile gaming industry not only promotes global accessibility and cross-cultural exchange but also profoundly influences social practices and community dynamics. For example, the mobile game Angry Birds became a blockbuster cultural symbol soon after its release in December 2009, rapidly transcending this industry to influence merchandise, entertainment media, and even educational content globally. All these aspects make mobile gaming a perfect example of a cultural industry as it blends artistic expression, cultural interpretation, and societal engagement with commercial organizations.

In the mobile gaming industry, innovating new content in games is a dynamic and co-creative process. This process often involves updates to existing titles, such as new maps, modes, and features to maintain gamers' interest, as well as collaborative engagement with the gamer community (Miric & Jeppesen, 2020). Gamers are proactive; they frequently review and generate ideas for new games, propose gameplay mechanics improvements, and test new game prototypes, all of which inspire new content development (Piller & Ihl, 2009). Indeed, successful mobile game publishers, such as Space Ape and Rovio Entertainment, underscore the importance of this user-centric game-development approach, which not only offers innovative ideas but also guides the schedule for new content releases (Gupta & Rood, 2012). Gamer feedback facilitates a nuanced approach to innovation

such that the creation of new gaming content must adeptly keep up with the ever-changing preferences of gamers.

Given this persistent need for gaming content production, the challenge for publishers pivots from deciding whether to innovate to determining the optimal pace for innovation. Innovating too slowly risks obsolescence and losing gamers' interest, whereas releasing new content too quickly may not yield immediate returns on the innovation. Moreover, as the gamer base becomes increasingly internationalized through digital platforms (e.g., Apple App Store), understanding how to effectively engage with such a global community has become paramount for publishers, not just for tailoring gaming content to gamers' preferences but also for gauging their needs for new content over time. Gamers expressing an urgent craving for new content may render prompt innovation highly necessary and valuable, whereas their appreciation of new content being released in the indefinite future may downgrade the importance attached to innovation. Specifically, gamers from different countries could use various FTR language structures to frame their temporal expectations for innovation. In the next section, we argue that such variations in gamers' FTR framing plays an important role in influencing the pace of new content introduction in games.

Gamers' FTR framing and the pace of new gaming content introduction

Given the critical emphasis on the temporal aspect of mobile game development, we argue that gamers' strong FTR framing is negatively related to the pace of introducing new gaming content. Gamers speaking languages with different FTR strengths arrange future-referring marks in distinctive patterns, which provide interpretive frames to gauge gamers' temporal expectations (Giorgi, 2017; Rhee & Fiss, 2014). In particular, gamers who speak strong FTR languages employ future-referring linguistic cues when providing feedback on games. By doing so, they induce distal framing that indicates appreciation for new content in the distant future, evoking low perceived imminence for the prompt release of new gaming content. In contrast, gamers who speak weak FTR languages often articulate their future expectations in the present tense, creating proximal framing that expresses an immediate need for new gaming content. Given this clear focus on temporal context, the effect of gamers' FTR framing holds significant promise in influencing the perceived importance and urgency of innovating new content in games (Liang et al., 2018; Nadkarni et al., 2019).

Our contention is that the temporal framing induced by gamers' FTR can recalibrate perceptions of the intertemporal tradeoff between innovating new content and exploiting existing content in games. Gamers who speak strong FTR languages frame the benefits of new gaming content as something to be reaped in the distant future. Such a viewpoint might attenuate the impetus for innovating new content in games given the cognitive bias to discount future value (Nadkarni et al., 2019). Consequently, game publishers might shift their focus to other endeavors, postponing resource investment in content development. They might even defer innovation plans indefinitely until they have maximized the immediate value of their current offerings. Conversely, the immediacy conveyed by weak FTR languages implies that the benefits of releasing new content should be swift and forthcoming (Kardes et al., 2006). This induces more emphasis on taking action and adds increased urgency to innovating new content in games. Existing research bolsters this viewpoint, indicating that firms often mirror the temporal urgency expressed by stakeholders when shaping their strategies (Agle et al., 1999). In sum, we anticipate that gamers who communicate via strong FTR languages might slow down games' innovation pace as they discount the value of prompt innovation. Conversely, we expect that gamers who speak weak FTR languages are more effective in speeding up the introduction of new gaming content by highlighting the immediate value of innovation. Accordingly, we propose the following:

Hypothesis 1 (H1) The strength of gamers' linguistic FTR is negatively related to the pace of new content introduction in games.

The contingent impact of gamers' FTR framing on the pace of new gaming content introduction

To substantiate our theoretical account of gamers' linguistic FTR as a framing device, we further explore conditions that account for firms' susceptibility to such linguistic framing. Our baseline hypothesis contends that gamers' FTR framing recalibrates perceptions of the immediate benefits of introducing new cultural content, thereby affecting the innovation pace of games. While it is difficult to directly observe how gamers' framing changes perceptions, identifying conditions that enhance the effectiveness of such linguistic framing is within reach. It is well established that whether linguistic framing can strike a responsive chord is not uniform across all audiences (e.g., Giorgi, 2017). Different audiences process and interpret frames based on their unique cognitive backgrounds. Recent studies highlight two conditions that propel framing effectiveness: when audiences find the focal framing salient and noticeable (Entman, 1993; Pan et al., 2020) and when audiences find the focal framing familiar and likely to resonate with them (Lockwood et al., 2019; Pan et al., 2020). From this body of framing literature, we pinpoint two critical conditions that likely make mobile game publishers as audiences more responsive to gamers' FTR framing: the negativity of gamer feedback and the linguistic familiarity of game publishers.

Negativity of gamers' feedback We anticipate that the negative effect of gamers' FTR framing on the pace new gaming content is introduced is amplified when there is significant negative feedback. In the digital era, cultural products such as games face increasingly public forms of feedback from gamers (Orazi & Mannucci, 2024; Sharkey & Bromley, 2015). Given its detrimental consequences, negative feedback, highlighting gamers' criticism, complaints, or dissatisfaction about their gaming experiences, tends to garner heightened attention and scrutiny from game publishers. Research in social psychology shows that the negativity of gamer feedback increases framing salience due to the "negativity bias" – that is, individuals' propensity to attend to, learn from, and use negative information far more than positive information (Vaish et al., 2008).

Extending this reasoning to our context, we argue that negative feedback on games directs more managerial attention to gamers' FTR framing. Faced with the challenge of restoring gamer satisfaction, mobile game publishers find temporal cues in feedback to be key indicators for assessing whether innovation might swiftly address the issues at hand. As such, FTR framing becomes a salient factor in the innovation decision-making process. Following this logic, gamers' FTR framing is likely more noticeable when games receive significant negative feedback and therefore likely enhances the probability that these games' innovation pace appeals to gamers' temporal framing (Entman, 1993; Pan et al., 2020). Whereas gamers employing weak FTR languages are likely to induce perceptions of near-term gains from the prompt release of new gaming content, negative feedback makes such linguistic cues more salient and informative. In turn, when games receive minimal negative feedback, there could be a tendency to maintain the status quo, with less attention being paid to whether prompt innovation will pay off now or later. Accordingly, we propose the following:

Hypothesis 2 (H2) The negative relationship between gamers' linguistic FTR and the pace of new content introduction in games is strengthened by the negativity of gamers' feedback.

Linguistic familiarity Another critical condition that likely determines the effectiveness of FTR framing is linguistic familiarity – namely, the framing's use of linguistic elements that are well known to the target audience (Gavetti et al., 2005). We argue that linguistic familiarity enhances the likelihood that publishers will promptly introduce new content when encountering weak FTR from gamers. High linguistic familiarity indicates that mobile game publishers have sufficient exposure to or subjective experience with the linguistic features, nuances, and conventions of the languages employed by gamers (Cuypers et al., 2015; Dow et al., 2016). Recent studies suggest that high linguistic familiarity plays a crucial role in fostering understanding and connection, thereby enhancing resonance with audiences (Hayakawa & Keysar, 2018). Thus, the value of familiarity extends beyond the mere comprehension of languages and to also include a sense of appreciation associated with familiar linguistic framing.

Specifically, we contend that high linguistic familiarity fosters cognitive resonance between gamers and mobile game publishers, facilitating the interpretation of gamers' FTR cues. When publishers are familiar with gamers' languages, the aligned cognitive frameworks help decode and grasp gamers' temporal expectations for new gaming content (Liang et al., 2018). As a result, publishers who exhibit high linguistic familiarity with gamers' languages are likely to resonate more with their FTR framing, viewing it as informative and persuasive (Lockwood et al., 2019; Pan et al., 2020). Therefore, the temporal framing of gamers' FTR framing is likely more effective at influencing games whose publishers are more familiar with these gamers' languages. In contrast, low linguistic familiarity likely compounds the difficulties for publishers, making it more challenging for them to foster resonance and accurately interpret and follow gamers' temporal framing. This, in turn, likely dampens gamers' framing effectiveness (Tenzer et al., 2014). Further, IB scholars have shown that decision-making managers who process information in unfamiliar languages tend to emotionally distance themselves from the issues at hand, which diminishes the effect of framing (Brannen et al., 2014). Thus, even with concerted efforts to engage foreign gamers via local hires, game publishers grappling with low linguistic familiarity may find it challenging to resonate with gamers' FTR-induced temporal framing. Following these arguments, we propose the following:

Hypothesis 3 (H3) The negative relationship between gamers' linguistic FTR and the pace of new content introduction in games is strengthened by linguistic familiarity.

Methodology

Data and sample

The global mobile gaming industry, burgeoning from a nascent stage to a $68.5 billion giant within a decade (Wijman, 2019), presents a fitting empirical setting to study the influence of gamers' linguistic FTR on game-development processes. To compile our sample, we began by sourcing data from Apptopia, a leading analyst firm in the mobile application realm that has tracked and archived information about mobile apps on the iOS platform since 2015. Apptopia has been widely viewed as a legitimate source of industry data/information in the mobile application industry (Shaheer &

Li, 2020). To further validate the data's reliability, we confirmed the consistency of rankings and the ratings of the top 20 apps in our dataset with information from known mobile application data providers, such as data.ai and SensorTower.

We took a series of steps to construct a sample out of this initial database. We started by identifying mobile app publishers that appeared in the top 500 grossing rankings between 2015 and 2017. Since the distribution of revenues in the mobile application industry is heavily skewed, focusing on top-ranked publishers helps exclude the plethora of low performers in the long tail (Kapoor & Agarwal, 2017). Our conversations with industry experts corroborated this sampling strategy, emphasizing that low performers either lack a significant user base to generate feedback or are inept at effectively communicating with users. We then identified mobile games that were released by these competent publishers as our sample. In so doing, we accounted for prospective mobile games that were newly released and had not yet achieved top rankings. We compiled detailed information on these games' characteristics, updates, user engagement, and performance-related metrics, and complemented this dataset with proprietary data from Export Comments, a leading sentiment analysis company. We further collected detailed country-level information from several sources. Specifically, we gathered language structure data from Chen (2013) study, which provides a comprehensive language database frequently used by management scholars (e.g., Liang et al., 2018). We also obtained other country-level information, such as GDP per capita and population, from the World Development Indicators dataset. Next, we merged the country-level information with our primary mobile game dataset. After excluding mobile games without the necessary information and those that were not active during our observation period, we generated a final sample of 7787 mobile games in 57 major country markets.

Model and dependent variable

Given our particular focus on the timing of innovation, we used the Cox proportional hazards model to test our hypotheses. This duration model is particularly effective for examining the pace of strategic actions, whether it is the speed of new product releases, the internationalization process, responsiveness to competitive actions, or some other time-dependent variable (Yu & Cannella, 2007). In our case, the Cox model offers unique advantages over conventional regression models as we study the impact on cultural product innovation. First, it provides insights not only into the number of innovation incidents but also into the duration between these incidents, allowing us to explore the temporal dynamics of innovation outlined in our hypotheses.[1] Second, this model accounts for right-censoring – namely, when no innovation introduction is observed by the end of the study – thus preventing potential bias in our estimates. Specifically, we explained the time to cultural product innovation as a function of a set of explanatory variables through the following expression, where $h_0(t)$ is the baseline hazard rate and ß is the coefficient estimate of a vector of the explanatory variable X_i:

$$h_i(t) = h_0(t)\ \exp(\beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + ... + \beta_k X_{ik})$$

The dependent variable $hi(t)$ measures the hazard rate of cultural product innovation for game i on day t. Extending into the mobile gaming industry, we examined the pace at which mobile games introduce new gaming content – that is, the updates to existing games – as indicators of innovation (Chen et al., 2022; Miric & Jeppesen, 2020). Industry experts also suggest that this updating approach to innovation is prevalent among mobile game publishers as they strive to keep up with the rapidly evolving demands of gamers (e.g., Gupta & Rood, 2012). Due to data limitations in the initial sampling period, our observation window for game updates covers three years starting from 2016. Given our objective to analyze the pace of introducing new gaming content, we measured the number of days between the focal gaming content introduction and the immediately prior content introduction for the same game. The number of days was reset after each new introduction. Recognizing that a mobile game might introduce multiple innovations during our observation period, we adjusted for the correlation of these innovation events within games by clustering standard errors at the game level (Hutzschenreuter & Harhoff, 2020). To address the issue of tied events in our study context (Allison, 1984), we employed Breslow approximation, which handles tied events by treating them as occurring simultaneously and adjusting the risk set accordingly (Cleves et al., 2016). In addition, we included country-of-origin dummies for mobile games to control for the effect of unobserved covariables that vary across publishers' countries, such as publishers' FTR strength and cultural backgrounds. In sum, we specified the Cox proportional hazards model to handle multiple-record longitudinal data by modeling within-game correlation, enabling us to examine the nuanced temporal patterns of innovation in the mobile gaming industry.

[1] We greatly appreciate a valuable comment from an anonymous reviewer that helped us align our theoretical arguments with the choice of analysis technique.

Independent variable, moderators, and controls

Independent variable To measure our key independent variable – gamers' linguistic FTR strength – we first obtained country-level FTR strength using the language database shared by Chen (2013), which marks the presence of any possible grammatical markings of future events in a language even if infrequently used. Next, for each game, we identified the host countries of its gamers and calculated the aggregated value for gamers' linguistic FTR strength at the game level. We took two steps to calculate this variable. First, we used the number of comments for a focal game in each country as a weighting factor.[2] This choice of weight directly gauges the varying propensity for gamers across countries to engage and provide feedback (Barbro et al., 2020). Second, we calculated the aggregated value for gamers' linguistic FTR strength at the game level using a weighted average measure:

$$\frac{\sum_{j=1}^{n}(C_{i,j,t} * FTR_j)}{C_{i,t}},$$

where $C_{i,j,t}$ is the number of comments for game i in country j from the recent update up to day t, FTR_j is the strength of FTR in country j, and $C_{i,t}$ is the number of comments for game i worldwide from the recent update up to day t. For instances lacking the weighting for comments, we utilized downloads for imputation. In sum, the measurement yields the average linguistic FTR strength for gamers playing the focal game.

Moderators Negativity of gamers' feedback. To capture users' tendency to give negative feedback, we focused on user ratings, a major channel of user-firm communication in the context of the mobile gaming industry (Kübler et al., 2018). The valence of user ratings represents a key signal of whether users are satisfied with an app or not. For this measure, we used the number of one-star ratings in hundreds received by the focal game within the year leading up to the focal day. This straightforward measure directly captures the level of gamer negativity that publishers often encounter.

Linguistic familiarity. To measure publishers' linguistic familiarity with gamers' languages, we captured the extent to which the major languages of the gamers' residence countries (j) are widely used in the home country (l) of the focal mobile game's publisher based on a subindex of Dow and Karunaratna (2006) linguistic distance (LD) scale. It is a directional country pairwise linguistic distance index between countries j and l. To account for cross-country linguistic variations in the global gamer base, we used the inverse of a weighted average of linguistic distance based on the number of comments across gamers' residence countries:

$$\frac{C_{i,t}}{\sum_{j=1}^{n}(C_{i,j,t} * LD_{j,l})},$$

where $C_{i,j,t}$ is the number of comments for game i in country j from the recent update up to day t, $LD_{j,l}$ reflects the incidence[3] of the major languages of the gamers' residence countries j used in the home country l of the focal mobile game i's publisher, and $C_{i,t}$ is the number of comments for mobile game i worldwide from the recent update up to day t. A higher ratio indicates greater familiarity of the focal mobile game publisher with the gamers' languages.

Control variables We identified a series of controls that could potentially affect game-development behavior. We used the log-transformed number of days since a mobile game's release day as the measure for *mobile game age*. To account for the influence of a *mobile game's user base* on the introduction of new gaming content, we used the yearly count of downloads for the focal game app. We also controlled for *development experience* with the log-transformed number of prior games and updates released by the focal mobile game publisher. We used the log-transformed number for the app file size as the measure for *tech sophistication* (Ghose & Han, 2014) to control for the development challenges of the focal mobile game. Moreover, we used *competitor concentration* to measure the visibility of major competitors in the focal mobile game's markets, which has important implications for innovation timing (Turner et al., 2010). In particular, we used the Herfindahl–Hirschman Index (HHI) to capture the level of competitor concentration for each mobile game in each country. We constructed an HHI of the top 10 competing games in terms of revenues in a focal country and then calculated a weighted average of competitor concentration for each mobile game following the same procedure we used to construct our independent variable. We also included *competitive aggressiveness* as a control variable to capture the level of competitive dynamics the focal game faces. Specifically, we measured the number of updates released by the top 10 competing games in each country market in which the focal game competes. We constructed a game-level weighted average of competitive aggressiveness following the same procedure we used to construct our independent variable. We also used *GDP per capita, GDP growth,* and *population* to account for each country's general development level, economic growth, and size.

[2] We thank an anonymous reviewer for suggesting the weighting factor and rolling approach.

[3] The LD scale ranges from 1 (indicating an incidence of 90% or above) to 5 (indicating an incidence of less than 1%). When publishers and gamers originate from the same country, LD accounts for the percentage of non-major languages speakers within the country.

To address the concern that gamers' characteristics might confound the impact of their FTR on games' innovation pace, we included two sets of control variables using the same weighting method applied to measure the strength of gamers' FTR framing. First, we accounted for gamers' cultural attributes using Hofstede's six dimensions of national culture, which have been suggested to influence individuals' cognitions, such as their languages (Liang et al., 2018). Second, we controlled for other linguistic attributes that are often grammatically related to FTR. To do so, we consulted three leading linguistic experts and found that languages with strong FTR often exhibit less certainty and concreteness alongside greater use of active voice and first-person perspective. To accurately control for each of these linguistic characteristics, we introduced measures for evidentiality, numeral classifiers, passive constructions, and the inclusive/exclusive distinction in independent pronouns based on the World Atlas of Language Structures index.

Results

Table 1 displays the descriptive statistics and the correlation matrix of our main variables. We also expected to observe notable correlations among gamers' cultural and linguistic variables given their intertwined nature. To address concerns that such correlations might bias our results, we adhered to the methodological approach recommended by Kalnins (2018), presenting our findings both with and without these controls in place (for results without these controls, please see our robustness tests). This approach ensures that our conclusions are robust and not unduly influenced by these correlations. Prior to the analyses, we mean-centered the independent variable, moderators, and control variables. The interaction terms were constructed based on these mean-centered variables, thereby aiding clearer interpretation and comparison of coefficients across models.

The results of the Cox proportional hazards analysis obtained using standardized coefficients are shown in Table 2. Model 1 presents the controls only. In Model 2, we introduced gamers' linguistic FTR strength as an independent variable. This variable shows a coefficient of – 0.07 with a p value of 0.00, thus supporting H1. We interpreted the practical significance of our results using hazard ratios. A hazard ratio, which gives the effect size, is computed as $[(1/e^{\beta})–1] * 100$ percentage change in the hazard with each one-unit decrease in the predictor (Cleves et al., 2016). A higher hazard ratio reflects a faster pace of innovation (Tan & Vertinsky, 1996). Our analysis indicates that for a decrease of one standard deviation (0.16) in gamers' linguistic FTR strength, the hazard for a mobile game to introduce new gaming content increases by 7.57%. This percentage reflects a relative change, consistent with the Cox model's provision of hazard ratios instead of direct hazard estimates. To better understand the implication for innovation pace, we explored how this change in hazard affects the time to introduce new gaming content. By setting a standard game-development timeframe of three months, our calculations

Table 1 Descriptive statistics and correlations

		Mean	SD	1	2	3	4	5	6	7	8	9	10
1.	New gaming content	0.02	0.15	1.00									
2.	Gamers' linguistic FTR strength	0.86	0.16	−0.01	1.00								
3.	Negativity of gamers' feedback	1.80	5.69	0.02	0.01	1.00							
4.	Linguistic familiarity	1.01	0.56	−0.05	0.05	−0.03	1.00						
5.	Game age	6.40	1.07	−0.04	0.03	0.01	0.11	1.00					
6.	Game user base	11.29	1.97	0.02	0.01	0.47	−0.02	0.00	1.00				
7.	Development experience	2.46	1.03	−0.03	0.11	0.21	0.17	−0.02	0.45	1.00			
8.	Technological sophistication	18.78	0.98	0.04	−0.08	0.15	−0.21	−0.15	0.20	−0.16	1.00		
9.	Competitor concentration	0.17	0.07	0.00	−0.55	0.18	−0.07	−0.04	0.20	0.01	0.14	1.00	
10.	Competitor aggressiveness	5.20	0.31	0.00	0.29	0.06	0.17	0.01	0.27	0.07	−0.03	−0.19	1.00
11.	GDP per capita	10.56	0.49	−0.01	0.15	−0.02	0.12	0.08	0.08	0.04	0.01	−0.27	0.01
12.	GDP growth	1.24	0.35	0.01	−0.15	0.04	−0.03	−0.04	0.09	−0.02	0.05	0.28	0.11
13.	Population	18.35	1.52	0.01	−0.10	0.08	0.08	−0.01	0.02	−0.04	0.03	0.06	0.07
		11	12	13									
11.	GDP per capita	1.00											
12.	GDP growth	−0.52	1.00										
13.	Population	−0.08	0.13	1.00									

N = 3,079,943. Correlations with absolute values greater than 0.01 are significant at the 95% level

Table 2 Main results for the relationship between gamers' linguistic FTR strength and the introduction pace of new gaming content

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent variable					
Gamers' linguistic FTR strength		−0.073	−0.107	−0.096	−0.126
		(0.013)	(0.015)	(0.014)	(0.016)
		[0.000]	[0.000]	[0.000]	[0.000]
Interaction terms					
Gamers' linguistic FTR strength * Negativity of gamers' feedback			−0.104		−0.095
			(0.018)		(0.018)
			[0.000]		[0.000]
Gamers' linguistic FTR strength * Linguistic familiarity				−0.125	−0.109
				(0.017)	(0.011)
				[0.000]	[0.000]
Controls					
Negativity of gamers' feedback	0.054	0.054	0.051	0.049	0.047
	(0.009)	(0.009)	(0.008)	(0.009)	(0.008)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Linguistic familiarity	−0.459	−0.455	−0.456	−0.500	−0.504
	(0.038)	(0.038)	(0.038)	(0.023)	(0.022)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Game age	−0.262	−0.262	−0.263	−0.261	−0.261
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Game user base	0.127	0.133	0.140	0.123	0.128
	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Development experience	−0.197	−0.196	−0.191	−0.177	−0.174
	(0.016)	(0.016)	(0.015)	(0.014)	(0.014)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Technological sophistication	0.061	0.061	0.064	0.060	0.061
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Competitor concentration	−0.065	−0.095	−0.132	−0.096	−0.122
	(0.011)	(0.013)	(0.016)	(0.013)	(0.016)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Competitor aggressiveness	0.021	0.048	0.058	0.067	0.074
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
	[0.179]	[0.003]	[0.000]	[0.000]	[0.000]
GDP per capita	−0.736	−0.670	−0.995	−0.935	−1.130
	(0.284)	(0.285)	(0.308)	(0.294)	(0.309)
	[0.010]	[0.019]	[0.001]	[0.001]	[0.000]
GDP growth	0.013	0.011	0.014	0.012	0.017
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
	[0.379]	[0.455]	[0.329]	[0.394]	[0.263]
Population	1.457	0.578	1.774	0.106	1.741
	(2.855)	(2.866)	(2.842)	(2.835)	(2.857)
	[0.610]	[0.840]	[0.533]	[0.970]	[0.542]
Gamers' power distance	−0.086	−0.088	−0.102	−0.112	−0.123
	(0.029)	(0.029)	(0.031)	(0.030)	(0.031)
	[0.003]	[0.003]	[0.001]	[0.000]	[0.000]
Gamers' individualism	0.024	0.045	0.055	−0.091	−0.062
	(0.067)	(0.067)	(0.068)	(0.065)	(0.064)
	[0.717]	[0.504]	[0.417]	[0.162]	[0.336]

Table 2 (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
Gamers' masculinity	0.025	−0.018	−0.046	0.137	0.090
	(0.046)	(0.045)	(0.047)	(0.048)	(0.048)
	[0.591]	[0.691]	[0.329]	[0.004]	[0.057]
Gamers' uncertainty avoidance	0.034	0.041	0.054	0.037	0.049
	(0.030)	(0.031)	(0.032)	(0.031)	(0.031)
	[0.264]	[0.182]	[0.094]	[0.221]	[0.116]
Gamers' long-term orientation	0.038	0.046	0.046	0.024	0.027
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
	[0.002]	[0.000]	[0.000]	[0.039]	[0.021]
Gamers' indulgence	−0.056	−0.041	−0.021	−0.032	−0.016
	(0.057)	(0.057)	(0.059)	(0.055)	(0.056)
	[0.321]	[0.474]	[0.725]	[0.559]	[0.777]
Gamers' linguistic active voice	−0.044	−0.054	−0.051	−0.040	−0.041
	(0.033)	(0.034)	(0.034)	(0.030)	(0.030)
	[0.174]	[0.113]	[0.133]	[0.177]	[0.180]
Gamers' linguistic first person	0.019	0.051	0.052	−0.019	−0.007
	(0.040)	(0.042)	(0.042)	(0.038)	(0.038)
	[0.638]	[0.221]	[0.211]	[0.622]	[0.844]
Gamers' linguistic certainty	0.081	0.074	0.069	0.085	0.077
	(0.033)	(0.034)	(0.034)	(0.031)	(0.031)
	[0.014]	[0.030]	[0.042]	[0.006]	[0.014]
Gamers' linguistic concreteness	−0.041	−0.060	−0.061	−0.006	−0.011
	(0.028)	(0.028)	(0.028)	(0.026)	(0.025)
	[0.142]	[0.033]	[0.031]	[0.816]	[0.661]
Country-of-origin dummies	YES	YES	YES	YES	YES
Log-likelihood	−550,395	−550,299	−549,950	−549,603	−549,315
Observations	3,079,943	3,079,943	3,079,943	3,079,943	3,079,943

Standard errors are in parentheses

P values are in brackets.

suggest that the enhanced hazard could lead to new content being introduced around one week earlier. This acceleration in new game content introduction, shortening the innovation cycle by one week, accumulates over time, so its compound effect could create significant leadership for mobile games. Figure 1 further exploits the graphical benefits of the Cox model to demonstrate the impact of gamers' FTR framing on innovation. It shows that when gamers' linguistic FTR strength is weaker, games innovate at a quicker pace, as evidenced by the varying rates of cumulative hazard of innovation across different FTR levels.

In Models 3 and 4, we tested the moderation hypotheses by sequentially including interaction terms, and we then included all interaction terms in Model 5. The results indicate that both H2 and H3 are supported at the 99% level. The moderation effects are depicted through visual representations in Figs. 2 and 3. The figures show that high negativity of gamers' feedback and high linguistic familiarity enhance the magnitude of our main effect such that the slope of the negative relationship between gamers' linguistic FTR strength and new gaming content is steeper. Simple slope tests based on Model 5 provide further support for H2 and H3.

Regarding the interaction effect between gamers' linguistic FTR strength and the negativity of gamers' feedback, the simple slope tests show that a decrease of one standard deviation in gamers' linguistic FTR strength is associated with a 24.86% increase in the predicted pace of introducing new gaming content when the negativity of gamers' feedback is high (mean + 1 *SD*), a 13.54% increase in the predicted pace of introducing new gaming content when the negativity of gamers' feedback is at its mean, and a 3.15% increase in the predicted pace of introducing new gaming content when the negativity of gamers' feedback is low (mean–1 *SD*). Further, regarding the interaction effect between gamers' linguistic FTR strength and linguistic familiarity, the simple slope tests show that a decrease of one standard deviation in gamers' linguistic FTR strength is associated with a 26.49%

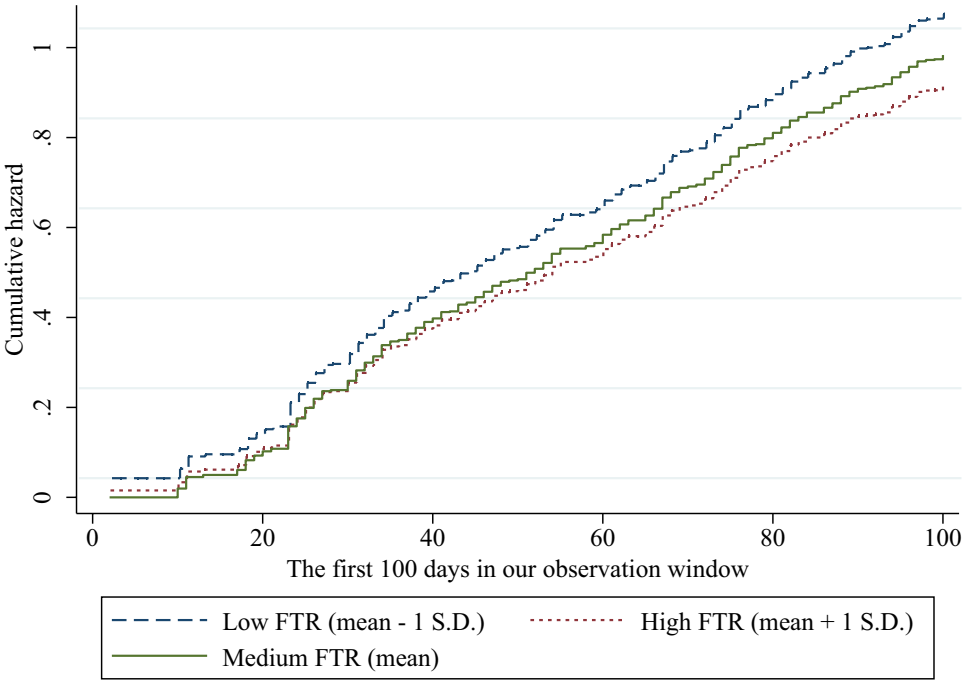

Fig. 1 Cumulative hazard of innovation at different levels of gamers' linguistic FTR

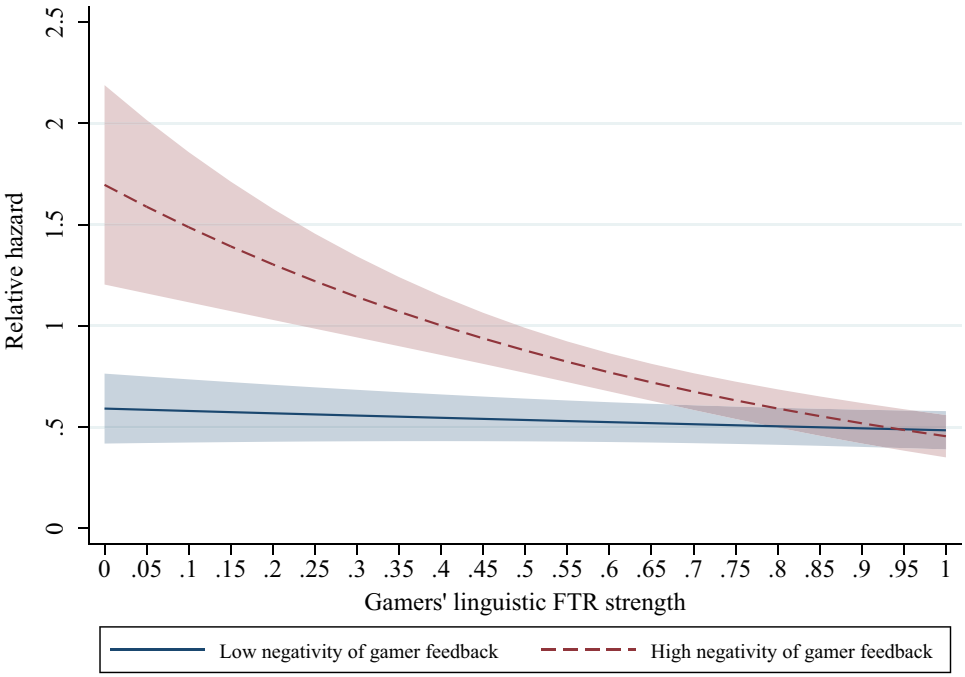

Fig. 2 Relative hazard of innovation as a function of gamers' linguistic FTR and negativity of gamer feedback (95% confidence intervals)

increase in the predicted pace of introducing new gaming content when linguistic familiarity is high (mean + 1 SD), a 13.43% increase in the predicted pace of introducing new gaming content when linguistic familiarity is at its mean level, and a 1.71% increase in the predicted pace of introducing new gaming content when linguistic familiarity is low (mean–1 SD).

Robustness tests

We conducted a series of supplementary analyses to validate the robustness of our findings. First, we followed Chen's (2013) approach to recreate new FTR variables using gamer review data. Chen's (2013) study is one of the first to investigate how variations in FTR across countries explain individual decision-making. While Chen (2013)

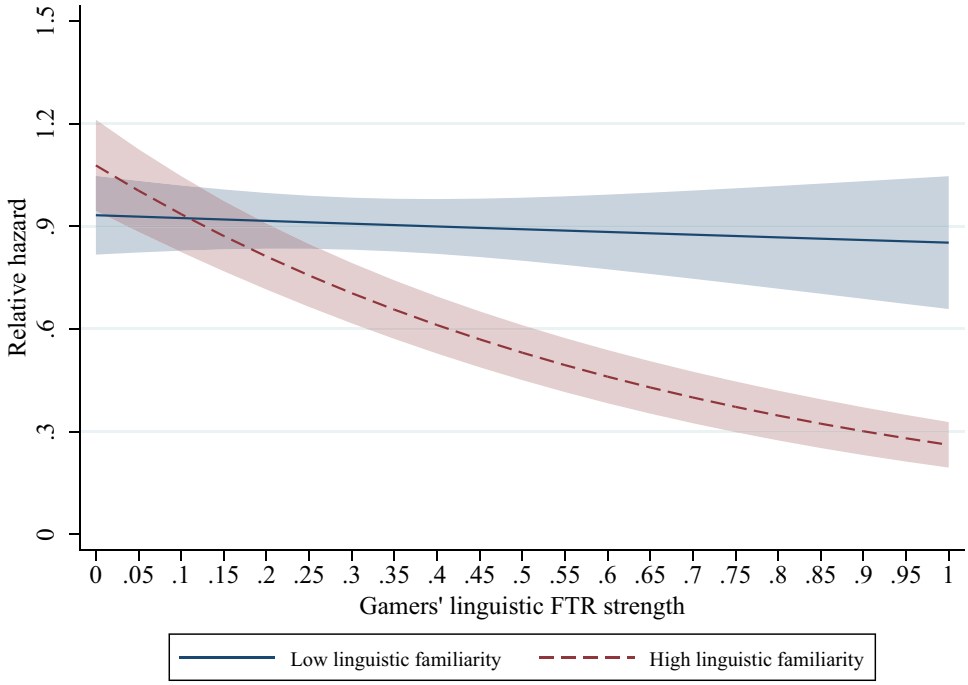

Fig. 3 Relative hazard of innovation as a function of gamers' linguistic FTR and linguistic familiarity (95% confidence intervals)

provides by far the most extensive typological research on the cross-linguistic grammaticalization of FTR, the resulting measure of gamers' linguistic FTR strength may overlook important and nuanced information in the gaming context (e.g., gamers from one country may use a lingua franca in their comments). This is important because our theorization of gamers' FTR framing takes place through online gamer communication. To address this issue, we generated an alternative measure of FTR strength by using large language models (LLMs) to analyze gamer comments and reexamined our hypotheses using this new measure. We found support for our hypotheses in these tests. Details of this additional analysis are presented in Appendix 1.

Second, we reran the main regressions without cultural and linguistic controls to mitigate the concern that our results are biased by the correlations among them. We followed the best practice suggested by Kalnins (2018), which advises demonstrating the robustness of results both with and without variables that are correlated as the most effective way to tackle multicollinearity. After excluding these controls, all bivariate correlations fall below 0.55, way below the threshold of 0.80 where multicollinearity might cause concerns (Kennedy, 2003). We further calculated the variance inflation factors (VIFs). The maximum VIF is 1.81 and the average VIF is 1.35, both well below the cautionary threshold of 5 (Neter et al., 1990). The results in Table 3 provide strong support for our main hypothesis, indicating that the influence of gamers' linguistic FTR is not driven by the correlations between our linguistic and cultural controls.

Third, we considered the possibility that the multilingual nature of some gamers' home countries may bias our results. Although multiple languages are spoken in many of our sample countries, they are oftentimes all weak FTR languages or all strong FTR languages. For example, almost all languages spoken in South Africa are strong FTR languages, both Finnish and Swedish used in Finland are weak FTR languages, and both English and French used in Canada are strong FTR languages. After examining the languages used in each country, we identified seven countries/regions (Belgium, Hong Kong, Malaysia, Nigeria, Philippines, Singapore, and Switzerland) where both weak and strong FTR languages are spoken by a nontrivial number of people. In these countries/regions, the effect of FTR languages on innovation pace is unclear because both weak and strong FTR languages are spoken. Consistent with recent studies on FTR (e.g., Kim, et al., 2021), we excluded observations in countries where more than 50% of gamers widely speak both weak and strong FTR languages. The results show that gamers' linguistic FTR strength is negatively associated with the pace of introducing new gaming content at the 1% significance level. Thus, the multilingual nature of countries does not bias our main effect. Detailed results are reported in Appendix 4.

Last, we conducted a robustness test to ensure our findings accurately represent trends across the global mobile gaming industry without being overly influenced by the distinct market dynamics of China and Japan, both significant yet weak-FTR-speaking markets. This test involved excluding observations for which more than 70% of revenues came from these countries. The refined analysis, detailed in Appendix 5, lends strong support to our hypotheses, confirming that the observed correlation between gamers'

Table 3 Results of models excluding cultural and linguistic controls

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent variable					
Gamers' linguistic FTR strength		−0.073	−0.107	−0.101	−0.130
		(0.013)	(0.014)	(0.014)	(0.016)
		[0.000]	[0.000]	[0.000]	[0.000]
Interaction terms					
Gamers' linguistic FTR strength * Negativity of gamers' feedback			−0.104		−0.097
			(0.018)		(0.018)
			[0.000]		[0.000]
Gamers' linguistic FTR strength * Linguistic familiarity				−0.122	−0.106
				(0.019)	(0.012)
				[0.000]	[0.000]
Controls					
Negativity of gamers' feedback	0.055	0.054	0.051	0.050	0.047
	(0.009)	(0.009)	(0.008)	(0.009)	(0.008)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Linguistic familiarity	−0.462	−0.459	−0.459	−0.496	−0.500
	(0.035)	(0.035)	(0.035)	(0.021)	(0.021)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Game age	−0.262	−0.262	−0.263	−0.260	−0.260
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Game user base	0.127	0.133	0.140	0.125	0.130
	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Development experience	−0.199	−0.197	−0.193	−0.180	−0.176
	(0.016)	(0.016)	(0.016)	(0.014)	(0.014)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Technological sophistication	0.061	0.061	0.064	0.060	0.062
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Competitor concentration	−0.065	−0.095	−0.132	−0.097	−0.124
	(0.011)	(0.013)	(0.016)	(0.013)	(0.016)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Competitor aggressiveness	0.024	0.052	0.062	0.072	0.080
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
	[0.127]	[0.001]	[0.000]	[0.000]	[0.000]
GDP per capita	−0.719	−0.629	−0.929	−0.930	−1.104
	(0.278)	(0.279)	(0.298)	(0.289)	(0.301)
	[0.010]	[0.024]	[0.002]	[0.001]	[0.000]
GDP growth	0.018	0.016	0.020	0.018	0.022
	(0.015)	(0.014)	(0.015)	(0.015)	(0.015)
	[0.228]	[0.272]	[0.178]	[0.228]	[0.137]
Population	2.203	1.195	2.186	1.018	2.479
	(2.812)	(2.826)	(2.822)	(2.806)	(2.839)
	[0.433]	[0.672]	[0.439]	[0.717]	[0.382]
Country-of-origin dummies	YES	YES	YES	YES	YES
Log-likelihood	−550,441	−550,343	−549,995	−549,679	−549,382
Observations	3,079,943	3,079,943	3,079,943	3,079,943	3,079,943

Standard errors are in parentheses

P values are in brackets

linguistic FTR strength and the innovation pace of gaming content is significant and is not an artifact of the market peculiarities in China and Japan. This methodological refinement underscores the robustness of our results, reaffirming our conclusions about the impact of FTR on gaming content innovation pace.

Discussion

This study endeavors to understand the influence of gamers' FTR framing on the pace of new gaming content introduction. Our analysis reveals that the strength of gamers' linguistic FTR negatively affects the pace of introducing new gaming content, and this baseline effect is moderated by the negativity of gamer feedback and the linguistic familiarity of game publishers. These findings hold significant implications for research on country of origin, cultural industries, and linguistics.

Contributions

First, our study contributes to extant literature by expanding the focus from the traditional emphasis on country of origin to also exploring cross-country variations in global user engagement. IB scholars have predominantly examined how products' countries of origin influence cultural product innovation, indicating that cultural product innovation from foreign countries or innovation with greater cultural distance is often perceived as less valuable compared to the domestic counterpart due to the liability of foreignness and cultural distance (e.g., Kim & Jensen, 2014; Lu et al., 2022). This literature stream primarily addresses relevant questions from the standpoint of firms or producers. Our paper complements these perspectives by focusing on the demand side, exploring how global user engagement and contributions can drive the innovation of cultural products. In particular, we highlight the transformative role of digital technologies, which have fundamentally reshaped the innovation landscape of cultural industries. Indeed, by removing barriers to global user access, digital marketplaces have democratized innovation beyond national borders and have highlighted the role of global users as active co-creators. Thus, for those competing in cultural industries, the associated innovation challenges now include not only overcoming the cultural discounts linked to products' countries of origin but also understanding how the composition of the global user base affects the innovation of cultural products. For example, international marketing studies extensively investigate the impact of a product's or brand's country of origin on consumers' behavior (Samiee et al., 2024). This research emphasizes that users form perceptions of products based on their origin countries, which can significantly impact these users' purchasing decisions. Our findings enrich this conversation by directing attention to users' countries of origin, revealing their integral role in the innovation process of cultural products. We suggest that it is essential to investigate which countries' user contributions can add unique value to cultural products and attract further consumption from users in other countries.

We also theorize and demonstrate that systematic cross-country variations in users' grammatical structures, particularly regarding their FTR, significantly influence firms' perceptions of the need and urgency to innovate. Our findings indicate that firms are inclined to pace their innovation based on whether their users predominantly use weak or strong FTR languages. This finding reveals that foreign users should not be viewed as barriers but rather as potential sources of innovation. It is critical to gain a deeper understanding of how the composition and characteristics of global users impact cultural product innovation. Thus, the imperative for cultural product publishers is to pivot their internationalization efforts toward orchestrating the global user base for innovation rather than solely focusing on overcoming the cultural discounts of innovation perceived by global users. Looking forward, we advocate for future research at the intersection of IB and cultural industries to explore other meaningful attributes of the global user base, such as knowledge diversity or cultural backgrounds, and to investigate how leveraging such heterogeneity can drive innovation more effectively.

Our second contribution lies in reframing the understanding of digital-era cultural industries by highlighting a user-centric view. In the past, the narrative focused on the dominance of a select group of intermediaries in curating and distributing cultural products globally (e.g., Hirsch, 1972; Peterson & Anand, 2004). However, the advent of digital technologies has profoundly reshaped the global landscape of cultural industries, leading to a convergence of production and consumption (Peukert, 2019). This evolution has placed users at the forefront of the innovation process, allowing them to influence not only the content, format, and release timing of cultural products but also the very cultures that emerge around these products. Our study is one of the first to explore how global users contribute to the co-creation of cultural products, where the associated cultural contents are centered on the products rather than tied to specific national identities (DiMaggio & Hirsch, 1976; Tung, 1995). For example, digital cultural products now draw upon diverse cultural resources and ideas from global users, integrating them into the development process. In the case of Genshin Impact, a mobile game originally developed in China, updates have introduced new characters with multicultural origins (e.g., South Asian, Middle Eastern, and African) based on feedback from its global gamer community. This trend of creating new cultural content by weaving together

local elements with global inputs may help illustrate how cultural products foster the creation of non-national subcultures, such as gamer culture (Drenten et al., 2023), that transcend national boundaries. By recognizing that a distinctive feature of these gaming contents is the democratic nature of their creation process, our approach paints a more holistic picture of user–firm interactions in a globalized and increasingly virtual cultural context, expanding our comprehension of these dynamics in a "new" cultural industry.

Third, our work harmoniously intertwines the strands of framing research with linguistic studies in IB. Over the past two decades, the use of languages in multinational enterprises (MNEs) has become a prominent research area in IB and management (Brannen et al., 2014; Karhunen et al., 2018). Various theoretical frameworks around concepts such as linguistic relativity, cultural perspectives, and the gravity model have enriched our understanding of how language variations influence MNEs' communication and operations (Cuypers et al., 2015; Dow et al., 2016). Concurrently, organizational studies outside of IB have explored language through a rhetorical lens, highlighting the role of managerial communication in framing content (Cornelissen, Mantere, & Vaara, 2014). Our research synergistically interweaves these literature threads, emphasizing the framing effects resulting from cross-language variations in FTR. We posit that understanding these framing effects is essential in decoding how the varied languages employed by global stakeholders (e.g., users) shape MNEs' sensemaking processes. We discovered that the FTR of users' languages facilitates temporal framing that potentially influences managerial perceptions regarding the imperative for promptly introducing new product innovation. To better understand such variations, we developed a theoretical framework of framing effectiveness and found supporting evidence that gamers' temporal framing is more effective when it gains audiences' attention and resonates with their beliefs (Pan et al., 2020; Rhee & Fiss, 2014). Our framework provides an important rationale for explaining why firms cater to certain stakeholders' temporal expectations more than others. More generally, this theoretical framework can be extended to studying how language structures act as cognitive institutions (Hechavarría et al., 2023; Liang et al., 2018) that influence future-oriented activities through language-induced cognitive tendencies. It also advocates for the integration of institutional interfaces to better understand how language nuances contribute to fragmentation in the institutional context, affecting the pace of innovation in an increasingly globalized user-driven landscape.

In addition to theoretical contributions, our study also unveils actionable insights that are particularly valuable for practitioners within digitally enabled cultural industries. The analysis we conducted reveals a compelling strategic advantage: a week can be saved from game development with a 16% share from weak-FTR-speaking markets. This finding underscores the importance of weak FTR markets for creating strategic windows to accelerate innovation, thereby serving as a potent differentiator in retaining user engagement and preventing users from turning to competing products. The advantage gained through this accelerated innovation is not merely immediate but accumulates over development cycles, potentially enabling firms to establish sustainable and significant leadership positions for cultural products. Moreover, our insights extend beyond weak FTR markets, offering strategic benefits for engaging with strong FTR markets as well. Weak FTR markets provide an exceptional platform for trialing new content and features, creating a feedback loop that enhances product offerings across all market segments regardless of their linguistic tendencies. By tailoring innovation strategies to align with the linguistic profiles of their user bases, cultural product creators can exploit this opportunity to not only expedite new content development but also refine their offerings to appeal more broadly across different markets. This approach ensures that cultural products can maintain a competitive edge and remain pertinent in the dynamic and rapidly evolving digital cultural landscape.

Our study also opens up several promising avenues for future research. First, although our study offers in-depth insights into the mobile gaming sector, there is an opportunity to explore how these findings might apply to traditional cultural industries, such as Hollywood, where longer production cycles and box office feedback could limit responsiveness to online user inputs (Hadida et al., 2021). Further, in supplementary analyses, we also extended our research to include video streaming and other cultural industries in the digital era. Our preliminary results, both qualitative and quantitative, suggest that our findings are broadly applicable across these sectors (see Appendix 3 for details).[4] Future research could further investigate the role of global users' linguistics in other cultural sectors dominated by digital platforms, such as video sharing on YouTube. Second, while our database includes 57 major country markets, in the future, scholars can explore a truly global user base by acquiring databases with full coverage of all countries. Expanding the scope in this way could provide deeper insights into global user engagement and its impact on cultural product innovation. Third, although we included a comprehensive list of control variables, there remains room for future research to delve deeper into unobserved factors and alternative explanations tied to linguistic and cultural nuances. Employing laboratory experiments could allow for the more precise identification of causal relationships, enabling researchers to explore the multilevel dynamics of how specific user

[4] We value the suggestion from an anonymous reviewer regarding replicating analyses beyond the mobile gaming sector.

comments influence innovation. Fourth, our study assumes that publishers' use of their native languages remains stable over time, which creates opportunities for future research to investigate how this factor varies under highly turbulent conditions. Finally, our findings suggest that negative feedback from gamers directs more attention to their temporal framing, particularly in the context of mobile gaming. However, this tendency might differ across various innovation contexts. For example, in technological product innovation, where user satisfaction is more closely tied to functional improvements, the urgency to innovate in response to temporal expectations may be less pronounced. Future research could explore these nuances, providing a richer understanding of how temporal framing influences innovation across different industries.

Conclusion

In the digital age, the interplay between cultural production and consumption has never been more intertwined. Our research probes this global trend, investigating how users' languages steer the pace of cultural product innovation. By examining the role of languages as mediums for conveying users' cultural and artistic preferences, we highlight their framing effect on the pace of cultural product innovation. In so doing, we shed light on users as key contributors to innovation in new cultural industries and advance our understanding of the important role of languages in shaping cross-border innovation.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1057/s41267-024-00752-0.

Acknowledgements We sincerely appreciate Professor Rosalie Tung, Professor Majorie Lyles, and Professor Sjoerd Beugelsdijk, along with the editors of the Special Issue on Cultural Industries, for their invaluable guidance and support throughout the review process. We are deeply grateful to the three anonymous reviewers for their constructive comments and insightful feedback. This research was supported by the National Natural Science Foundation of China (Grant No. 72202004, 72091314, 72192844, 72432007), the Philosophy and Social Sciences Research, Ministry of Education of China (Grant No. 22JZD018), and the University of South Carolina's Center for International Business Education and Research (CIBER) grants.

References

Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to CEOs? An investigation of stakeholder attributes and salience, corporate performance, and CEO values. *Academy of Management Journal, 42*(5), 507–525.

Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data* (No. 46). Sage Publications, Newbury Park, CA

Barbro, P. A., Mudambi, S. M., & Schuff, D. (2020). Do country and culture influence online reviews? An analysis of a multinational retailer's country-specific sites. *Journal of International Consumer Marketing, 32*(1), 1–14.

Benischke, M. H., Rietveld, J., & Slangen, A. (2023). Within-firm variation in the liability of foreignness: A demand-based perspective. *Journal of Management, 49*(5), 1738–1765.

Bilkey, W. J., & Nes, E. (1982). Country-of-origin effects on product evaluations. *Journal of International Business Studies, 13*(1), 89–100.

Brannen, M. Y., Piekkari, R., & Tietze, S. (2014). The multifaceted role of language in international business: Unpacking the forms, functions and features of a critical challenge to MNC theory and performance. *Journal of International Business Studies, 45*(5), 495–507.

Caves, R. E. (2000). *Creative industries: Contracts between art and commerce* (No. 20). Harvard University Press, Cambridge, MA.

Chang, C. T., & Lee, Y. K. (2009). Framing charity advertising: Influences of message framing, image valence, and temporal framing on a charitable appeal. *Journal of Applied Social Psychology, 39*(12), 2910–2935.

Chen, L., Zhang, P., Li, S., & Turner, S. F. (2022). Growing pains: The effect of generational product innovation on mobile games performance. *Strategic Management Journal, 43*(4), 792–821.

Chen, M. K. (2013). The effect of language on economic behavior: Evidence from savings rates, health behaviors, and retirement assets. *American Economic Review, 103*(2), 690–731.

Cleves, M. A., Gould, W., & Marchenko, Y. V. (2016). *An Introduction to Survival Analysis Using Stata.* Stata Press.

Cochoy, F., Licoppe, C., McIntyre, M. P., & Sörum, N. (2020). Digitalizing consumer society: equipment and devices of digital consumption. *Journal of Cultural Economy, 13*(1), 1–11.

Cornelissen, J. P., Mantere, S., & Vaara, E. (2014). The contraction of meaning: The combined effect of communication, emotions, and materiality on sensemaking in the Stockwell shooting. *Journal of Management Studies, 51*(5), 699–736.

Cornelissen, J. P., & Werner, M. D. (2014). Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Academy of Management Annals, 8*(1), 181–235.

Cuypers, I. R. P., Ertug, G., & Hennart, J. F. (2015). The effects of linguistic distance and lingua franca proficiency on the stake taken by acquirers in cross-border acquisitions. *Journal of International Business Studies, 46*(4), 429–442.

Dahl, Ö. (2000). *Tense and Aspect in the Languages of Europe*. Berlin: Mouton de Gruyter.

De Miguel Molina, B., Hervás-Oliver, J. L., & Boix Domenech, R. (2019). Understanding innovation in creative industries: Knowledge bases and innovation performance in art restoration organisations. *Innovation, 21*(3), 421–442.

DeHart, W. B., & Odum, A. L. (2015). The effects of the framing of time on delay discounting. *Journal of the Experimental Analysis of Behavior, 103*(1), 10–21.

DiMaggio, P., & Hirsch, P. M. (1976). Production organizations in the arts. *The American Behavioral Scientist, 19*(6), 735.

Dow, D., Cuypers, I. R., & Ertug, G. (2016). The effects of within-country linguistic and religious diversity on foreign acquisitions. *Journal of International Business Studies, 47*(3), 319–346.

Dow, D., & Karunaratna, A. (2006). Developing a multidimensional instrument to measure psychic distance stimuli. *Journal of International Business Studies, 37*(5), 578–602.

Drenten, J., Harrison, R. L., & Pendarvis, N. J. (2023). More gamer, less girl: Gendered boundaries, tokenism, and the cultural persistence of masculine dominance. *Journal of Consumer Research, 50*(1), 2–24.

Elliott, C., Konara, P., Ling, H., Wang, C., & Wei, Y. (2018). Behind film performance in China's changing institutional context: The impact of signals. *Asia Pacific Journal of Management, 35*, 63–95.

Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication, 43*(4), 51–58.
Falchetti, D., Cattani, G., & Ferriani, S. (2022). Start with "why", but only if you have to: The strategic framing of novel ideas across different audiences. *Strategic Management Journal, 43*(1), 130–159.
Gavetti, G., Levinthal, D. A., & Rivkin, J. W. (2005). Strategy making in novel and complex worlds: The power of analogy. *Strategic Management Journal, 26*(8), 691–712.
Ghose, A., & Han, S. P. (2014). Estimating demand for mobile applications in the new economy. *Management Science, 60*(6), 1470–1488.
Giorgi, S. (2017). The mind and heart of resonance: The role of cognition and emotions in frame effectiveness. *Journal of Management Studies, 54*(5), 711–738.
Giorgi, S., & Weber, K. (2015). Marks of distinction: Framing and audience appreciation in the context of investment advice. *Administrative Science Quarterly, 60*(2), 333–367.
Good, M. C., & Hyman, M. R. (2021). Direct and indirect effects of fear-of-missing-out appeals on purchase likelihood. *Journal of Consumer Behaviour, 20*(3), 564–576.
Gupta, S., & Rood, D. (2012). *Angry Birds*. HBS No. 512-033. Cambridge, Harvard Business School Publishing, MA.
Hadida, A. L., Lampel, J., Walls, W. D., & Joshi, A. (2021). Hollywood studio filmmaking in the age of Netflix: A tale of two institutional logics. *Journal of Cultural Economics, 45*, 213–238.
Handke, C. (2004). Defining creative industries by comparing the creation of novelty. In *WIWIPOL and FOKUS Workshop Creative Industries-A measure for urban development*.
Hayakawa, S., & Keysar, B. (2018). Using a foreign language reduces mental imagery. *Cognition, 173*, 8–15.
Hechavarría, D. M., Brieger, S. A., Levasseur, L., & Terjesen, S. A. (2023). Cross-cultural implications of linguistic future time reference and institutional uncertainty on social entrepreneurship. *Strategic Entrepreneurship Journal, 17*(1), 61–94.
Hirsch, P. M. (1972). Processing fads and fashions: An organization-set analysis of cultural industry systems. *American Journal of Sociology, 77*(4), 639–659.
Hirsch, P. M., & Gruber, D. A. (2015). Digitizing fads and fashions: How technology has 'glocalized' the market for creative products. In C. Jones, M. Lorenzen, & J. D. Sapsed (Eds.), *The Oxford Handbook on Creative Industries* (pp. 421–438). Oxford University Press.
Hutzschenreuter, T., & Harhoff, P. L. (2020). National capital city location and subsidiary portfolio expansion: The negative effect of geographic distance to the capital city at inception on the speed of subsequent investments. *Journal of International Business Studies, 51*(7), 1107–1132.
Jaw, Y. L., Chen, C. L., & Chen, S. (2012). Managing innovation in the creative industries–A cultural production innovation perspective. *Innovation, 14*(2), 256–275.
Jones, C., Svejenova, S., Pedersen, J. S., & Townley, B. (2016). Misfits, mavericks and mainstreams: Drivers of innovation in the creative industries. *Organization Studies, 37*(6), 751–768.
Kalnins, A. (2018). Multicollinearity: How common factors cause type 1 errors in multivariate regression. *Strategic Management Journal, 39*(8), 2362–2385.
Kapoor, R., & Agarwal, S. (2017). Sustaining superior performance in business ecosystems: Evidence from application software developers in the iOS and Android smartphone ecosystems. *Organization Science, 28*(3), 531–551.
Kardes, F. R., Cronley, M. L., & Kim, J. (2006). Construal-level effects on preference stability, preference-behavior correspondence, and the suppression of competing brands. *Journal of Consumer Psychology, 16*(2), 135–144.
Karhunen, P., Kankaanranta, A., Louhiala-Salminen, L., & Piekkari, R. (2018). Let's talk about language: A review of language-sensitive research in international management. *Journal of Management Studies, 55*(6), 980–1013.
Kim, H., & Jensen, M. (2014). Audience heterogeneity and the effectiveness of market signals: How to overcome liabilities of foreignness in film exports? *Academy of Management Journal, 57*(5), 1360–1384.
Kim, J., Kim, Y., & Zhou, J. (2017). Languages and earnings management. *Journal of Accounting and Economics, 63*(2–3), 288–306.
Kim, J., Kim, Y., & Zhou, J. (2021). Time encoding in languages and investment efficiency. *Management Science, 67*(4), 2609–2629.
Kübler, R., Pauwels, K., Yildirim, G., & Fandrich, T. (2018). App popularity: Where in the world are consumers most sensitive to price and user ratings? *Journal of Marketing, 82*(5), 20–44.
Lampel, J., & Germain, O. (2016). Creative industries as hubs of new organizational and business practices. *Journal of Business Research, 69*(7), 2327–2333.
Lee, F. L. (2006). Cultural discount and cross-culture predictability: Examining the box office performance of American movies in Hong Kong. *Journal of Media Economics, 19*(4), 259–278.
Liang, H., Marquis, C., Renneboog, L., & Sun, S. L. (2018). Future-time framing: The effect of language on corporate future orientation. *Organization Science, 29*(6), 1093–1111.
Lockwood, C., Giorgi, S., & Glynn, M. A. (2019). "How to do things with words": Mechanisms bridging language and action in management research. *Journal of Management, 45*(1), 7–34.
Loewenstein, G., & Elster, J. (1992). *Choice over time*. New York: Russell Sage Foundation.
Lorenzen, M., & Frederiksen, L. (2007). Why do cultural industries cluster? Localization, urbanization, products and projects. *Creative cities, cultural clusters and local economic development*, 155–179.
Lu, J. W., Ma, H., & Xie, X. (2022). Foreignness research in international business: Major streams and future directions. *Journal of International Business Studies, 53*(3), 449–480.
Miric, M., & Jeppesen, L. B. (2020). Does piracy lead to product abandonment or stimulate new product development? Evidence from mobile platform-based developer firms. *Strategic Management Journal, 41*(12), 2155–2184.
Nadkarni, S., Pan, L., & Chen, T. (2019). Only timeline will tell: Temporal framing of competitive announcements and rivals' responses. *Academy of Management Journal, 62*(1), 117–143.
Neter, J., Wasserman, W., & Kutner, M. H. (1990). *Applied statistical models* (3rd ed.). Boston, MA: Irwin.
OECD, (2022). The culture fix: Creative people, places and industries, local economic and employment development OECD, Publishing Paris.
Orazi, D. C., & Mannucci, P. V. (2024). Disentangling audiences' reactions to creative content and creative packaging. *Strategic Management Journal*, published online.
Pan, L., Li, X., Chen, J., & Chen, T. (2020). Sounds novel or familiar? Entrepreneurs' framing strategy in the venture capital market. *Journal of Business Venturing, 35*(2), 105930.
Peterson, R. A., & Anand, N. (2004). The production of culture perspective. *Annual Review of Sociology, 30*, 311–334.
Peukert, C. (2019). The next wave of digital technological change and the cultural industries. *Journal of Cultural Economics, 43*(2), 189–210.
Piller, F., & Ihl, C. (2009). Open Innovation with Customers Foundations, Competences and International Trends, The German Federal Ministry of Research, and Europäischer Sozialfond ESF, Aachen.
Pine, B., & Gilmore, J. H. (1999). *The experience economy*. Cambridge, MA: Harvard Business School Press.
Priem, R. L., Li, S., & Carr, J. C. (2012). Insights and new directions from demand-side approaches to technology innovation,

entrepreneurship, and strategic management research. *Journal of Management, 38*(1), 346–374.
Rhee, E. Y., & Fiss, P. C. (2014). Framing controversial actions: Regulatory focus, source credibility, and stock market reaction to poison pill adoption. *Academy of Management Journal, 57*(6), 1734–1758.
Rietveld, G. J. (2011). Profiting from digitally distributed cultural products: the case of content producers in the video games industry. In K. J. McCarthy, M. Fiolet, & W. Dolfsma (Eds.), *The Nature of the New Firm* (pp. 100–121). Cheltenham: Edward Elgar Publishing.
Samiee, S., Leonidou, L. C., Katsikeas, C. S., & Aykol, B. (2024). Research on country-of-origin perceptions: Review, critical assessment, and the path forward. *Journal of International Business Studies, 55*(3), 285–302.
Shaheer, N. A., & Li, S. (2020). The CAGE around cyberspace? How digital innovations internationalize in a virtual world. *Journal of Business Venturing, 35*(1), 105892.
Sharkey, A. J., & Bromley, P. (2015). Can ratings have indirect effects? Evidence from the organizational response to peers' environmental ratings. *American Sociological Review, 80*(1), 63–91.
Tan, B., & Vertinsky, I. (1996). Foreign direct investment by Japanese electronics firms in the United States and Canada: Modelling the timing of entry. *Journal of International Business Studies, 27*(4), 655–681.
Tenzer, H., Pudelko, M., & Harzing, A. W. (2014). The impact of language barriers on trust formation in multinational teams. *Journal of International Business Studies, 45*(5), 508–535.
Thieroff, R. (2000). On the areal distribution of tense-aspect categories in Europe. In Ö. Dahl (Ed.) 6 *Tense and Aspect in the Languages of Europe* (pp. 265–308). Berlin, New York: De Gruyter.
Tian, P., & Yang, Q. (2023). The impact of online customer reviews on product iterative innovation. *European Journal of Innovation Management*, published online.
Tung, R. L. (1995). Guest editor's introduction: strategic human resource challenge: managing diversity. *International Journal of Human Resource Management, 6*(3), 482–493.
Turner, S. F., Mitchell, W., & Bettis, R. A. (2010). Responding to rivals and complements: How market concentration shapes generational product innovation strategy. *Organization Science, 21*(4), 854–872.
Un, C. A. (2016). The liability of localness in innovation. *Journal of International Business Studies, 47*(1), 44–67.
UNESCO. (2013). Creative economy report. https://unesdoc.unesco.org/ark:/48223/pf0000224698. Accessed 22 March 2024.
Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. *Psychological Bulletin, 134*(3), 383.
Wang, S. L., Gu, Q., Von Glinow, M. A., & Hirsch, P. (2020). Cultural industries in international business research: Progress and prospect. *Journal of International Business Studies, 51*(4), 665–692.
Wang, X., Pan, H. R., Zhu, N., & Cai, S. (2021). East Asian films in the European market: The roles of cultural distance and cultural specificity. *International Marketing Review, 38*(4), 717–735.
Wijman, T. (2019). The global games market will generate $152.1 billion in 2019 as the U.S. overtakes China as the biggest market. https://newzoo.com/insights/articles/the-global-games-market-will-generate-152-1-billion-in-2019-as-the-u-s-overtakes-china-as-the-biggest-market/. Accessed 3 July 2023.
Yu, T., & Cannella, A. A., Jr. (2007). Rivalry between multinational enterprises: An event history approach. *Academy of Management Journal, 50*(3), 665–686.

Pengxiang Zhang (PhD, University of South Carolina) is Assistant Professor at the Department of Organization and Strategic Management, Guanghua School of Management, Peking University. His research focuses on digital innovation, platform ecosystems, strategic rhythms, and global strategy. His work has been published in the *Strategic Management Journal*, *Journal of Management*, and *Journal of Management Studies*.

Jingtao Yi (PhD, University of Nottingham) is Dean and Professor of Economics at Renmin Business School, Renmin University of China. His research interests lie at internationalization strategy, emerging market multinationals, innovation and international business, and international business in the digital economy, with a focus on platform ecosystems, platform competition, and globalization. His work has been published in the *Journal of International Business Studies*, *Journal of Management*, *Journal of Management Studies*, among others.

Chao Niu (PhD, University of Hong Kong) is Assistant Professor (Teaching) in the School of Management and Economics, The Chinese University of Hong Kong, Shenzhen. His research interests include corporate digital strategy, sustainable development, multinational enterprise, and institutional theory. In addition, he also serves as the research center director of the Digital Strategy and Intelligent Empowerment Research Center at Shenzhen Institute of Data Economy.

Eric Yanfei Zhao (PhD, University of Alberta) is Associate Dean for Research and Professor of Strategy at the Saïd Business School and St. Hugh's College, University of Oxford. His research addresses topics like optimal distinctiveness, AI and firm strategy, and institutions and entrepreneurship. Eric's work has been published in leading journals and is widely cited. He has received top early career awards from AOM and SMS. His book, *Optimal Distinctiveness*, is published by Cambridge University Press.

Sali Li (PhD, University of Utah) is a Moore Professor at the Sonoco International Business Department at the Darla Moore School of Business. His work has been published in leading journals. His research on the internationalization of digital innovation was awarded the Rugman Prize by the AIB. Professor Li's research has won the Lazardis Award for JBV's Best Paper of the Year in 2020, Temple/AIB Best Paper Award, etc. He also serves as a consulting editor at *JIBS*, and an associate editor of JWB.